ABSTRACT OF THE INVENTION

The invention allows applications to transparently use a bus, such as the IEEE-1394 serial bus, as if it were an Ethernet (IEEE 802.3). In a conventional Ethernet, each node is assigned a unique 6-byte MAC address in order to receive frames addressed to it over the LAN. According to the invention, IEEE-1394 bus node identifiers are mapped to Ethernet MAC addresses using for example a digital signature algorithm. Ethernet frames are then "wrapped" into 1394 bus packets and addressed to the destination node using the hashed address. The receiver unwraps the 1394 packet and restores the Ethernet frame to its original form. An optimum packet size for transmission of Ethernet packets over the 1394 bus is selected with reference to speed topology maps in the 1394 bus nodes, and this optimum size is transmitted to bus nodes. This packet size is reported to TCP to specify the packet size, and all packets larger than that size are fragmented and reassembled at the receiving node. The protocol works transparently across networks that are linked via bridges.